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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
FLANDERS, ANDREW C	

ART UNIT	PAPER NUMBER
2644	

DATE MAILED: 10/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/985,976	CORNELISSE, LEONARD E.	
	Examiner	Art Unit	
	Andrew C. Flanders	2644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 August 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-57* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-57* is/are rejected.

7)☒ Claim(s) *18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 January 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 26 August 2005 has been entered.

Response to Arguments

Applicant's arguments with respect to claims 1 - 59 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

Claim 18 objected to because of the following informalities: the phrase "is varied" should apparently read "are varied". Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 1 – 41 and 44 - 57 are rejected under 35 U.S.C. 102(e) as being anticipated by Ishige (U.S. Patent 5,892,836).

Regarding **Claims 1, 13 and 33**, Ishige discloses:

A method of generating an analog acoustic output signal from an acoustic input signal in accordance with a configurable input/output characteristic (abstract), said method comprising the steps of:

(a) converting the acoustic input signal into a digital acoustic input signal (i.e. and input circuit for receiving the analog audio signal and converting it into a digital signal; Fig. 7 element 12);

(b) transforming the digital acoustic input signal into one or more frequency domain input signals (Fig. 6 and col. 7 lines 37 – 57);

(c) detecting the magnitude of each of the one or more frequency domain input signals (i.e. a frequency analyzer; Fig. 7 element 21);

(d) receiving a user adjustable digital loudness normalization control signal for dynamically controlling the configuration of said input/output characteristic (i.e. the digital hearing aid further includes a memory which previously stores hearing characteristics of a person to be fitted with the hearing aid, and the memory can be

programmed as a removable ROM or by communicating with a fitting device; col. 6 lines 52 – 61);

(e) for each of the one or more frequency domain input signals, determining a gain value in response to the user adjustable digital loudness normalization control signal and the magnitude of the frequency domain input signal (i.e. the hearing compensating filter coefficient circuit receives the analysis result and the hearing characteristics of the person and sets the filer coefficients; col. 7 lines 57 – 67 and col. 8 lines 1 – 10);

(f) providing one or more frequency domain output signals by multiplying each of the frequency domain input signals by the corresponding gain value (i.e. the digital audio signal is supplied to the hearing compensating circuit; Fig. 7 element 22);

(g) transforming the one or more frequency domain output signals into a digital acoustic output signal (i.e. the output of the hearing compensation circuit is applied to the output circuit; Fig. 7);

(h) converting the digital acoustic output signal into the analog acoustic output signal (Fig. 7 element 13).

Regarding **Claims 2, 14, 34 – 37, 44 and 57**, in addition to the elements stated above regarding claims 1, 13, 33, and 41, Ishige further discloses:

wherein step (d) further comprises adjusting the configurable input/output characteristic for at least one frequency band corresponding to the one or more frequency domain input signals by one of:

increasing the level of said configurable input/output characteristic by a larger amount for lower level sounds compared to higher level sounds when a user adjusts the user adjustable digital loudness normalization control signal to increase the level of the analog acoustic output signal,

and decreasing the level of said configurable input./output characteristic by a smaller amount for lower level sounds compared to higher level sounds when the user adjusts the user adjustable digital loudness normalization control signal to decrease the level of analog acoustic output signal (i.e. the memory is programmed/fitted to the hearing characteristic of the user; and the hearing compensating circuit is configured to cause the input audio signal to match with the narrowed dynamic range of the person fitted with the hearing aid; col. 7 lines 4 – 7; thus it is inherent that the sounds the user perceives as being lower will be amplified greater than the sounds that the user perceives as being higher).

Regarding **Claims 3, 15 and 50**, in addition to the elements stated above regarding claims 1, 13 and 33, Ishige further discloses:

performing steps (c), (e) and (f) by means of a programmable processor (i.e. Ishige discloses (*processor*) elements 21, 22, 24, 25, 26, 27 and 31 in Fig. 7 that process digital signals and are programmed via the memory through the fitting device).

Regarding **Claims 4, 39 and 53**, in addition to the elements stated above regarding claims 3, 34 and 50, Ishige further discloses:

wherein step (e) comprises calculating the corresponding gain value for the one or more frequency domain input signals by means of a fitting formula programmed into said programmable digital signal processor, wherein a parameter of the fitting formula is provided by the user adjustable digital loudness normalization control signal (i.e. the hearing compensating filter coefficient setting circuit defines the coefficients for the filters in the hearing compensating circuit on the data that is in the memory which is supplied by the user through the fitting of the hearing aid; Fig. 7 and the associated text in the disclosure)

Regarding **Claims 5, 22, 38 and 51**, in addition to the elements stated above regarding claims 3, 15, 34 and 50, Ishige further discloses wherein step (e) comprises determining the corresponding gain value for each of the one or more frequency domain input signals by means of a look-up table stored in said programmable digital signal processor, wherein information in the look-up table is retrieved based on the user adjustable digital loudness normalization control signal (i.e. the coefficient table in Fig. 7; and at the time of changing the characteristics of the hearing compensating filter, the channel filter coefficient setting circuit refers to the coefficients stored in the coefficient table; col. 8 lines 45 – 55; and the hearing compensating circuit is configured to cause the input audio signal to match with the narrowed dynamic range of the person fitted with the hearing aid; col. 7 lines 4 – 7).

Regarding **Claims 6, 23, 24 and 52**, in addition to the elements stated above regarding claims 5, 22 and 50, Ishige further discloses wherein said look-up table is stored in non-volatile memory in said programmable digital signal processor (i.e. Ishige discloses (*processor*) elements 21, 22, 24, 25, 26, 27 and 31 in Fig. 7 that process digital signals (*a digital signal processor*) and are programmed via the memory through the fitting device; and the coefficient table can be stored in ROM; col. 8 line 55).

Regarding **Claims 7, 25, 40 and 54**, in addition to the elements stated above regarding claims 3, 15, 34 and 50, Ishige further discloses:

wherein step (e) comprises determining the corresponding gain value for each of the one or more frequency domain input signals by means of a fitting formula programmed into said programmable digital signal processor and a look-up table, wherein information in the look-up table is retrieved based on the user adjustable digital loudness normalization control signal (i.e. the coefficient table in Fig. 7; and at the time of changing the characteristics of the hearing compensating filter, the channel filter coefficient setting circuit refers to the coefficients stored in the coefficient table; col. 8 lines 45 – 55; and the hearing compensating circuit is configured to cause the input audio signal to match with the narrowed dynamic range of the person fitted with the hearing aid; col. 7 lines 4 – 7).

Regarding **Claims 8, 16, 17, 26, 27 and 55**, in addition to the elements stated above regarding claims 7, 5, 25 and 50, Ishige further discloses wherein said look-up

table is stored in non-volatile memory in said programmable digital signal processor (i.e. Ishige discloses (*processor*) elements 21, 22, 24, 25, 26, 27 and 31 in Fig. 7 that process digital signals (*a digital signal processor*) and are programmed via the memory through the fitting device; and the coefficient table can be stored in ROM; col. 8 line 55).

Regarding **Claim 9**, in addition to the elements stated above regarding claim 1, Ishige further discloses:

wherein step (b) comprises transforming the digital acoustic signal into at least two frequency domain input signals, each of said frequency domain input signals having a configurable channel input/output characteristic associated therewith, said configurable channel input/output characteristic together forming said configurable input/output characteristic, and wherein said at least two frequency domain input signals are provided with different channel input/output characteristics (i.e. Fig. 6 and col. 7 lines 37 – 57; and the hearing compensating filter coefficient circuit receives the analysis result and the hearing characteristics of the person and sets the filer coefficients; col. 7 lines 57 – 67 and col. 8 lines 1 – 10).

Regarding **Claims 10 – 12, 20, 28 – 30 and 45 - 49**, in addition to the elements stated above regarding claims 1, 13 and 34, Ishige further discloses wherein said configurable input/output characteristic is a curvilinear compression characteristic, an input compression characteristic, and an output compression characteristic. Ishige discloses matching the input audio signal with the narrowed dynamic range of the

person fitted with the hearing aid using a filter; col. 7 lines 4 – 7. Thus, depending on the users hearing loss characteristics, the device may increase or decrease the high and low frequency components at different values. Further portions will lower amplitude values may be increased or decreased accordingly. As such, Ishige anticipates this element of the claimed invention.

Regarding **Claims 18, 19, 30, 31 and 41**, in addition to the elements stated above regarding claims 9, 2, 13 and 33, Ishige further discloses:

wherein each of said configurable channel input/output characteristics are (is) varied in response to said user adjustable digital loudness normalization control signal (i.e. the memory is programmed/fitted to the hearing characteristic of the user; and the hearing compensating circuit is configured to cause the input audio signal to match with the narrowed dynamic range of the person fitted with the hearing aid; col. 7 lines 4 – 7).

Regarding **Claim 56**, in addition to the elements stated above regarding claim 33, Ishige further discloses:

(a) a microphone for receiving an input sound providing an analog input acoustic signal (Fig. 7 element 11)

(b) an A/D converter coupled to said sound energy signal and for reception device for receiving said analog input acoustic signal or an image of said analog input acoustic signal and coupled to said analysis filter for providing said digital acoustic input signal (Fig. 1 element 12)

(c) a D/A converter coupled to said synthesis filter for receiving said digital output acoustic signal and for providing an analog output acoustic signal (Fig. 1 element 13);

(d) a speaker coupled to said D/A converter for receiving said analog output acoustic signal and providing an output sound energy signal (Fig. 1 element 14).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 42 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishige (U.S. Patent5,892,836) in view of Martin (U.S. Patent 6,130,950).

Regarding **Claims 42 and 43**, claims 42 and 43 claim various methods of which to adjust the control signal, a variable resistor and a two-way switch which are not explicitly disclosed by Ishige. However, programming the data into Ishige's memory can be done a number of ways. For instance, Martin discloses a plurality of adjustment elements one of which controls the gain control stage and its adjustment is stored into the memory; (Fig. 1; col. 3 lines 65 – 66 and col. 4 lines 14 – 18). Using a mechanical two-way switch in place of this potentiometer would not patentably distinguish the

claimed invention from the prior art because it does not produce any new or useful result. Thus implementing a programming means such as the method disclosed by Martin or a two way switch would have been obvious to one of ordinary skill in the art. One would have been motivated to do so to in order to effectively and easily program the memory disclosed by Ishige.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Binder (U.S. Patent 6,574,340), Faltys (U.S. Patent 5,626,629) and Kates (U.S. Patent 4,852,175).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew C. Flanders whose telephone number is (571) 272-7516. The examiner can normally be reached on M-F 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on (571) 272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

acf

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